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US 4893119 A US 4775261 A US 4713910 A

US 4711608 A US 4576509 A US 4576507 A

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(58) Field of Search

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ONLINE DATABASES: WPI

(54) Retractable traffic control barrier

(57) A traffic control barrier has a housing 10, 40 recessed into the ground and barrier means moveable from a retracted position to a raised position in response to a signal. The barrier means may comprise a plate 14 slidably located in the housing 10 or arms 50 pivotable connected to the housing 40. Actuation means for moving the barrier may be electrically, pneumatically or hydraulically operated. The signal may be remotely operable such as by radio control.

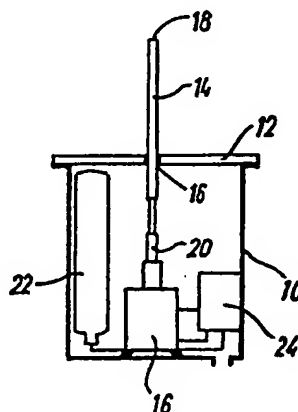


Fig. 2

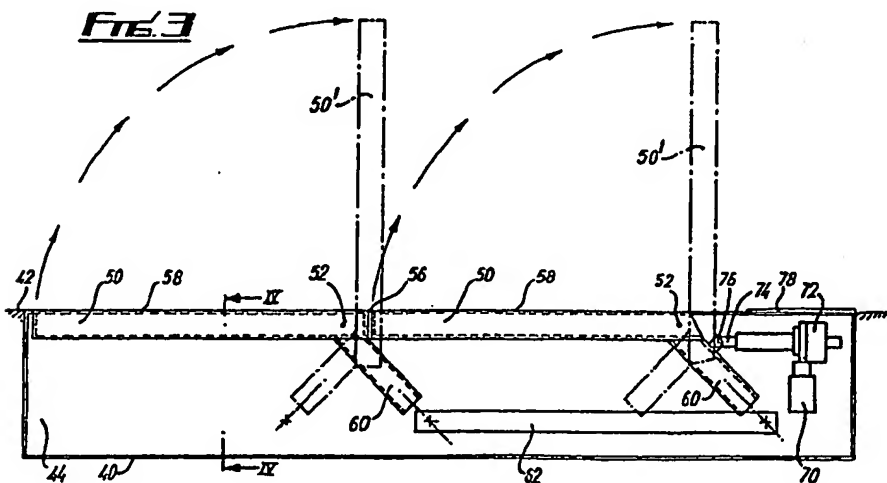


Fig. 3

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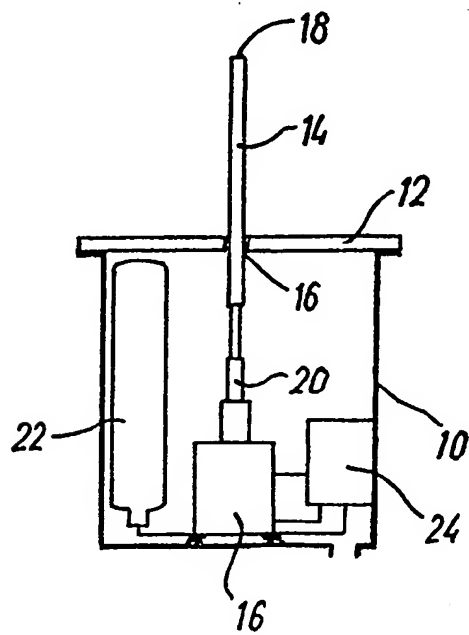
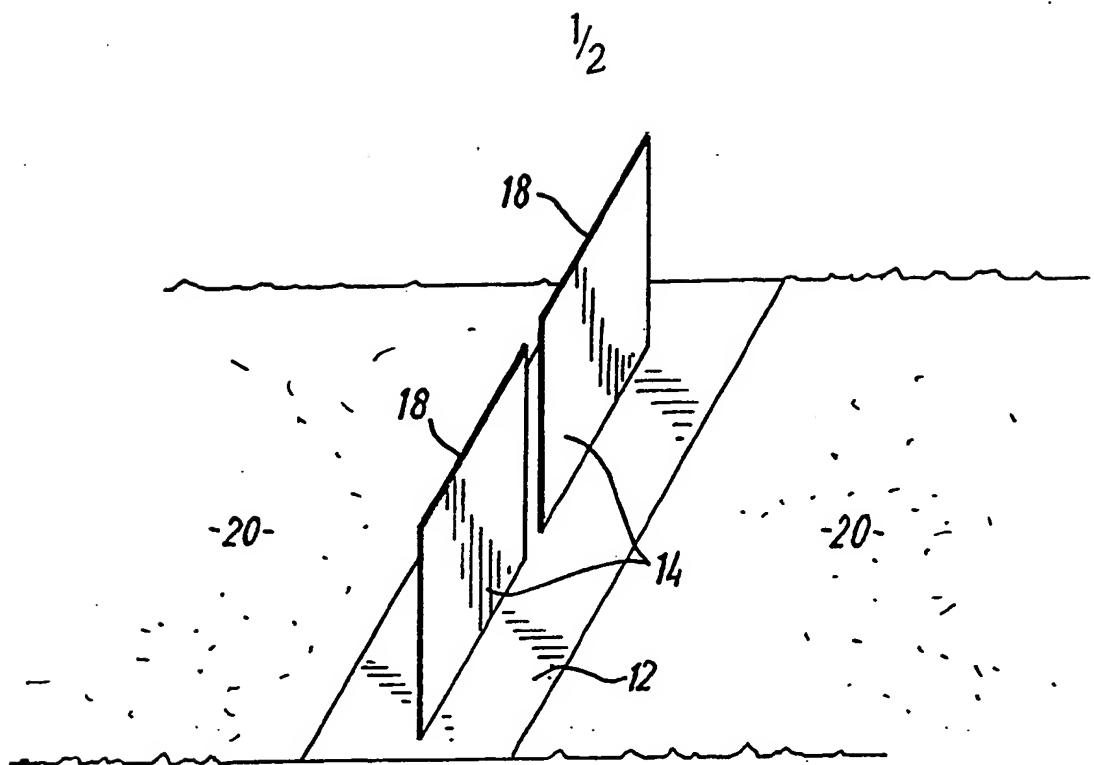


FIG. 3

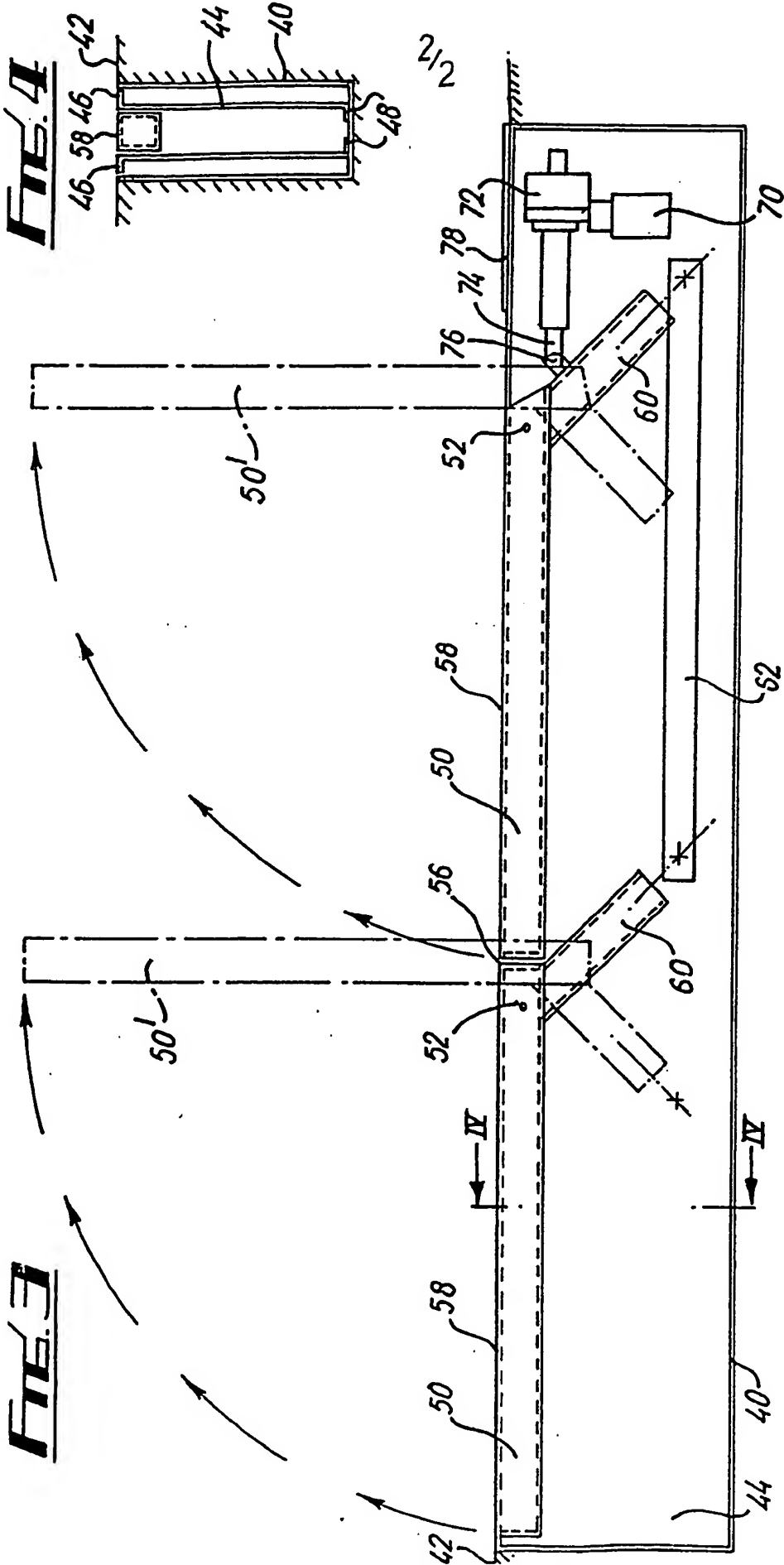


FIG. 4

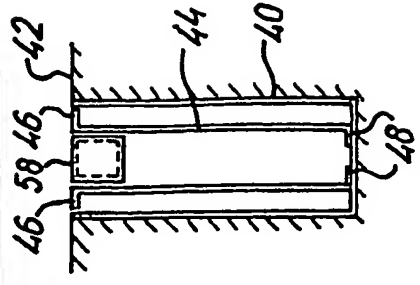
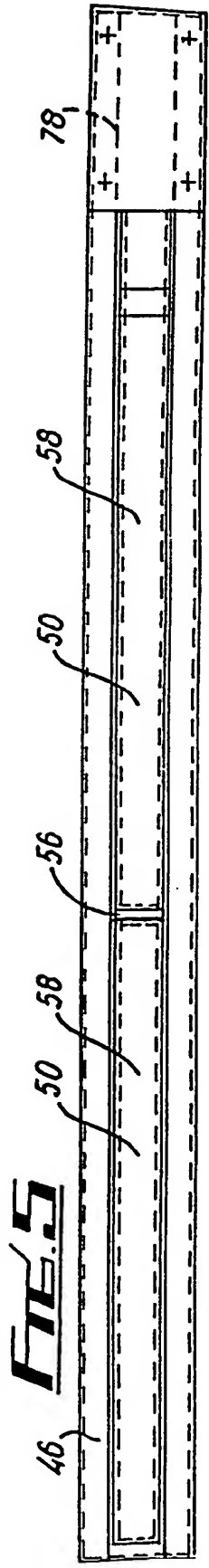


FIG. 5



- 1 -

Improvements in or relating to
Traffic Control Arrangements

The present invention concerns improvements in or relating to traffic control arrangements, especially but not exclusively traffic barriers.

The increase in theft from domestic and commercial premises continues and in many instances the goods stolen are bulky and cannot be readily be removed from the premises without the aid of suitable transport. Thus, if it is possible to prevent the approach of cars, vans and even lorries near to the premises, a considerable deterrent to theft will be presented as it is unlikely that the thieves will wish to carry stolen goods over long distances to their vehicle in view of the time this would involve, the increase in effort and the increased risk of detection.

A further problem, especially with retail and wholesale outlets, is a crime known as "ram raiding" where entry to the premises is forced by driving a vehicle at and through doors, windows and walls.

An object of the present invention is to provide a traffic control arrangement for installation, for example, in the driveway of a premises where the driveway presents the only means for vehicle access, or in front

of a shop or warehouse, the control arrangement being so installed and constructed that it can be remotely operated from the premises and/or from an authorised vehicle.

According to the present invention there is provided a traffic control arrangement adapted for location at or below ground level and including barrier means movable from an in-use position in which they present an obstacle to the passage of vehicles over the arrangement and a retracted position whereby they allow free access of the vehicle, means for moving said barrier means and signalling means for actuating said moving means.

Preferably said signalling means are remotely operable. Preferably said signalling means are radio controlled.

Preferably said barrier means comprise one or more plate-like structures retractable into a housing of the arrangement. Alternatively said barrier means comprise one or more arms retractable into a housing of the arrangement.

Preferably said plate-like structures are slidable between their in-use and retracted positions. Alternatively they may be pivotal from their in-use to their retracted position.

Preferably said arm or arms are pivotally mounted to the housing and have an extension therefore to which said moving means is connected.

Preferably said extensions are arranged at an angle to said arms. Preferably said angle is 45° .

Preferably the moving means acts on only one extension and a linkage connects said one extension with extensions of other arms.

Preferably said linkage is pivotally mounted between said extensions of each arm and is connected to said extension at a point which is further from the pivotal mount of the arm to the housing than the point to which said moving means is connected.

Preferably said arms, when in the retracted position, lie in substantially end-to-end, abutting relationship.

Preferably said housing includes an outer member and an inner member, the outer member being adapted for permanent location in a channel in the ground in which the arrangement is mounted, the inner member being removeable from the outer member with said barrier means and moving means.

Preferably the means for moving the barrier means are electrically, pneumatically or hydraulically operated.

Preferably the electrically operated barrier moving means are battery powered. Alternatively, the pneumatically operated moving means are powered by compressed gas. Preferably the compressed gas is air. Preferably the compressed air source is remote from the assembly. Alternatively compressed air is supplied from a rechargeable compressed air reservoir located in the arrangement.

Preferably means are incorporated such that if the moving means fails the barrier means moves automatically to its in-use position.

Preferably the barrier means include warning devices to warn approaching traffic when they are in

their in-use position.

An embodiment of the present invention will now be described by way of example only with reference to the accompanying drawings in which:

Fig. 1 is a perspective view of traffic control arrangement in the in-use position;

Fig. 2 is a diagrammatic cross-section through a traffic control arrangement;

Fig. 3 is a sectional cross-section of a modified arrangement;

Fig. 4 is a transverse cross-section taken on the line IV-IV of Fig. 3; and

Fig. 5 is plan view of the modified arrangement.

A first embodiment of a traffic control arrangement illustrated in Figs. 1 and 2 is intended principally for use on the driveways to dwellings and commercial premises, especially when these driveways are relatively long and provide the only means of access to the premises. The object of the control arrangement is to

provide a barrier to traffic either entering or leaving the premises so that, on the one hand, if the premises is being burgled it will not be possible for the thieves to drive a vehicle up to the premises thus preventing the removal of bulky items, and on the other hand, thieves will be unable to remove vehicles left unattended outside the premises.

It is important that the traffic control arrangement presents a barrier to incoming and outgoing vehicles and that when retracted allows incoming and outgoing vehicles to pass by unhindered.

The arrangement shown by way of example in Figs 1 and 2 comprises an open-topped channel member 10 having a cover member 12 containing barrier plates 14 and pneumatic actuating means 16. The assembly of these components is recessed in a driveway 20 such that the top plate 12 is coincident with the surface of the driveway. Preferably two barrier plates 14 are provided in end to end relationship and are slidable through apertures 16 in the top plate 12 to move from an in-use extended position, as shown in Fig. 1, to a retracted position in which the top edge 18 of the plates is coincident with the top of the cover plate 12 such that in the retracted position they provide no obstacles to the passage of

traffic thereover.

Means are provided for raising and lowering the plates and guide means (not shown) are provided within the channel member 10 for guiding the plates as they are raised and lowered.

The raising and lowering means comprises a pneumatic ram 16 having a telescopic piston 20. One or more rams 16 can be provided for each plate 14. The supply of compressed air to power the rams may be provided from a remote source or may be provided from a compressed air reservoir 22 located within the channel 10, the reservoir 22 being removable for recharging as appropriate.

Battery operated electronic and electrical control means 24 is included in the channel 10 and is actuatable remotely from the premises or from an authorised vehicle.

In operation, the control means 24 normally occupies the position shown in the drawings so that the passage of a vehicle over the arrangement in either direction is prevented. When an authorised vehicle is required to pass the arrangement, a remote radio transmitter, normally located within an authorised

vehicle, is actuated to signal a radio receiver of the control means 24. The receiver on detecting an authorised signal, allows air to be exhausted from the rams 16 causing retraction of the plates 14 but only for a predetermined time necessary to allow the vehicle to pass, after which time a supply of air is provided to cause the rams 16 to extend and raise the plates 14 to their in-use position.

Further signalling means, which may be linked to the electronic control means 24 by cable, can be located within the premises to which the driveway leads. Key operated means may also be linked to the electronic control means 24.

Warning means, for example reflectors or lights (not shown) may be mounted on the plates near their tops.

A second embodiment of the traffic control arrangement as shown in Figs. 3,4 and 5. Whereas an arrangement of this nature can be used in the driveways of houses etc., it is intended principally for erection in front of a shop or warehouse to act as a deterrent and an obstacle to "ram raiders". As with the embodiment shown in Figs. 1 and 2, the arrangement is moveable from an in-use position where it creates a traffic barrier to

a retracted position where it presents no obstacle to the passage of traffic thereover.

The arrangement is housed in a galvanised steel or other non-corrosive material outer housing 40 having an open-topped channel configuration sunk below ground level 42 such that the top of the channel coincides with ground level. An inner housing 44 is located within the outer housing and this is of a removeable nature for maintenance and repair purposes. The inner housing 44 normally comprises two spaced apart members having outwardly directed flanges 46 at their upper ends and inwardly directed flanges 48 at their lower end, the upper flanges 46 coinciding with ground level 42.

In the embodiment illustrated two barrier arms 50 of square cross-section tubular steel are pivotally mounted about a pivot shaft 52 near one of their ends between the plates 44. The arrangement of the pivot pin is such that when the arms are in their retracted position as shown in the drawings, they lie in a substantially end-to-end relationship with a minimum gap 56 therebetween and with one of their faces 58 co-planer with the upper flanges 46 and ground level 42. It will be realised therefore that if with the barrier arms in the retracted position the traffic control arrangement

presents neither an obstacle to the passage of traffic thereover nor any appreciable gap therethrough.

Each arm 50 has an extension 60 welded at an angle of 45° thereto and the extension 60 are joined together by a link 62 which, in the drawings, is shown detached from the extensions 60 for clarification purposes. It will be realised, therefore, that movement of one arm about its pivot axis 52 from its in-use position 50' as shown in chain lines in Fig. 3, causes movement of the other arm by means of the linkage 62.

Movement is achieved by an electric motor 70 acting through a gear box 72 which imparts horizontal movement to a push rod 74 connected between the gear box and one of the arm extensions 60. The pivotal connection 76 between the push rod 74 and the arm extension 60 is closer to the pivot axis 52 than the connection of the link 62.

That part of the housing 40 in which the electric motor, gearbox and push rod assembly is housed is provided at ground level with a cover plate 78 which is removeable for maintenance purposes.

To move the arms between their in-use and retracted position, it is simply necessary to actuate the electric motor 70 and this can be done remotely from within the shop or warehouse or by a radio controlled arrangement or by any other suitable means.

Various other modifications can be made without departing from the scope of the invention, for example in the Figs. 1 and 2 embodiment only one plate 14 may be employed or a plurality of plates or rods may provide the barrier. In a further modification the plate(s) may be pivotal from a substantially horizontal retracted position to a substantially vertical in-use position.

In a further modification of the Figs. 1 and 2 embodiment the pneumatic actuation means could be replaced by hydraulic or electrically powered operating means. In the latter case the power supply could be a replaceable, rechargeable battery located in the arrangement.

It is desirable that the traffic control arrangement "fails safe" in its in-use position and that the securely protected manually operable means are provided to retract the barriers in abnormal operating circumstances. A further modification provides spring

loading on the plates to bias them towards the in-use position. In this arrangement the hydraulic, pneumatic or electric operating means operate against the spring loading to retract the plates.

In a modification of the embodiment shown in Figs. 3 to 5, the electrical actuating means may be replaced by hydraulic or pneumatic actuating means. Many more arms than the two illustrated can be provided and it is also possible to incorporate between the arms 50 additional barrier means which, in the in-use position are arranged substantially horizontally. Such additional means could be collapsible and could be mounted between the arms at one or more points intermediate the pivot axis 52 and the end of the arm 50. The housing assembly can be modified and, if necessary, can include drainage means.

Additional strengthening means may be incorporated so that the arms are resistant to impact from vehicles. It is to be noted, however, that the present design gives good impact resistance, bearing in mind that in the in-use position the arm extension 60 is still snugly located between the plates 44 and consequently provides resistance to impact of a vehicle.

CLAIMS

1. A traffic control arrangement adapted for location at or below ground level and including barrier means moveable from an in-use position in which they present an obstacle to the passage of vehicles over the arrangement and a retracted position whereby they allow free access of the vehicle, means for moving said barrier means and signalling means for actuating said moving means.
2. An arrangement as claimed in claim 1, in which said signalling means are remotely operable.
3. An arrangement as claimed in claim 1 or claim 2, in which said signalling means are radio controlled.
4. An arrangement as claimed in any one of claims 1 to 3, in which said barrier means comprise one or more plate-like structures retractable into a housing of the arrangement.
5. An arrangement as claimed in any one of claims 1 to 3, in which said barrier means comprise one or more arms retractable into a housing of the arrangement.

6. An arrangement as claimed in claim 4, in which said plate-like structures are slidable between their in-use and retracted position.

7. An arrangement as claimed in claim 4, in which said plate-like structures are pivotal from their in-use to their retracted position.

8. An arrangement as claimed in claim 7, in which said arm or arms are pivotally mounted to the housing and have an extension therefore to which said moving means is connected.

9. An arrangement as claimed in claim 8, in which said extensions are arranged at an angle to said arms.

10. An arrangement as claimed in claim 9, in which said angle is 45°.

11. An arrangement as claimed in any one of claims 8 to 10, in which the moving means acts on only one extension and a linkage connects said one extension with extensions of other arms.

12. An arrangement as claimed in claim 11, in which said linkage is pivotally mounted between said extensions

of each arm and is connected to said extension at a point which is further from the pivotal mounting of the arm to the housing than the point to which said moving means is connected.

13. An arrangement as claimed in any one of claims 5 to 12, in which said arms, when in the retracted position, lie in substantially end-to-end abutting relationship.

14. An arrangement as claimed in any one of the preceding claims, in which said housing includes an outer member and an inner member, the outer member being adapted for permanent location in a channel in the ground in which the arrangement is mounted, the inner member being removeable from the outer member with said barrier means and moving means.

15. An arrangement as claimed in any one of the preceding claims, in which the means for moving the barrier means are electrically, pneumatically or hydraulically operated.

16. An arrangement as claimed in claim 15, in which the electrically operated barrier moving means are battery powered.

17. An arrangement as claimed in claim 15, in which the pneumatically operated moving means are powered by compressed gas.

18. An arrangement as claimed in claim 17, in which the compressed gas is air.

19. An arrangement as claimed in claim 18, in which the compressed air source is remote from the assembly.

20. An arrangement as claimed in claim 18, in which compressed air is supplied from a rechargeable compressed air reservoir located in the arrangement.

21. An arrangement as claimed in any one of the preceding claims, in which means are incorporated such that if the moving means fails the barrier means moves automatically to its in-use position.

22. An arrangement as claimed in any one of the preceding claims, in which the barrier means include warning devices to warn approaching traffic when they are in their in-use position.

23. A traffic control arrangement substantially as herein before described with reference to Figs. 1 and 2

or Figs. 3 to 5 of the accompanying drawings.

24. Any novel subject matter or combination including novel subject matter herein disclosed, whether or not within the scope of or relating to the same invention as any of the preceding claims.

Relevant Technical Fields

- (i) UK Cl (Ed.M) E1G (G91A)
(ii) Int Cl (Ed.5) E01F (13/00)

Search Examiner
MR S CHURCH

Date of completion of Search
8 NOVEMBER 1994

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant
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A: Document indicating technological background and/or state of the art. &: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
X	GB 2267923 A	(McCOMISH) whole of document	1,2,3,5, 15,17,18, 19 and 20
X	GB 2247266 A	(HIGGINSON et al) whole of document	1,2,3,5,15, 17,18,19 and 20
X	GB 2245296 A	(LUKES ENGINEERING) see page 4 line 27 to page 5 line 28 in particular	1,2,3,5, 15 and 16
X	US 4893119 A	(NASATKA) whole of document	1-4,7,15, 17-20 and 22
X	US 4775261 A	(FLADUNG) see Figure 2 and column 4 lines 25 to 49 in particular	1,2,3,5, 8,9,11 and 12
X	US 4713910 A	(ARMO) whole of document	1-3,5,8, 15 and 22
X	US 4711608 A	(GHUSN) note the retractable posts 25	1-3,5, 15 and 17-22
X	US 4576509 A	(BEATY) whole of document	1-4,7,15, 16 and 22

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Category	Identity of document and relevant passages	Relevant to claim(s)
X	US 4576507 A (TERIO) whole of document	1-3, 15 and 16
X	US 4574523 A (NASATKA) whole of document	1-4, 7, 15, 17-20, 22

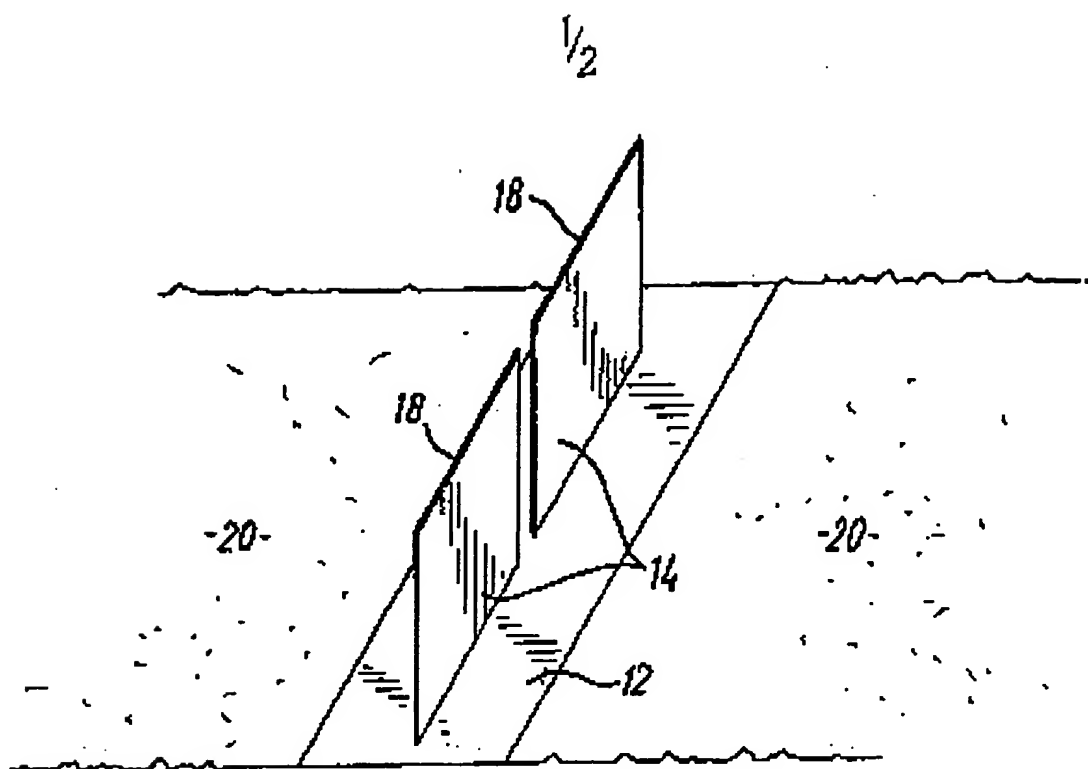


FIG. 1

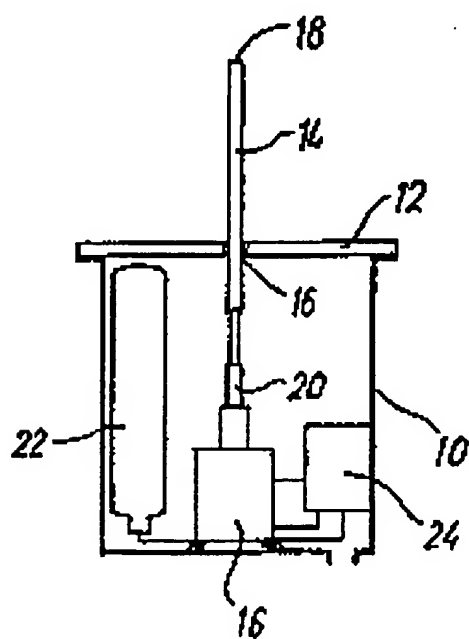


FIG. 2

FIG. 3

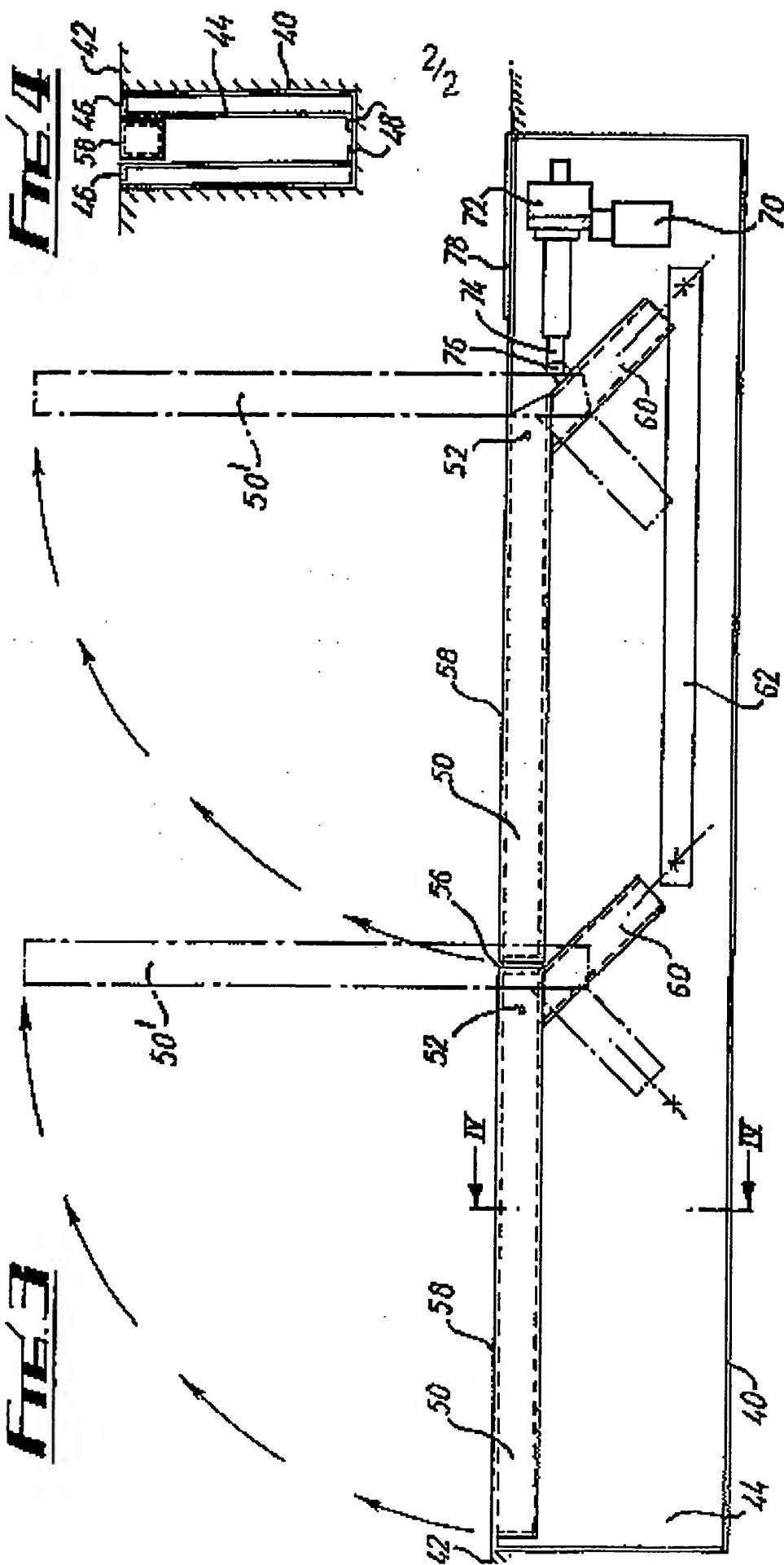


FIG. 4

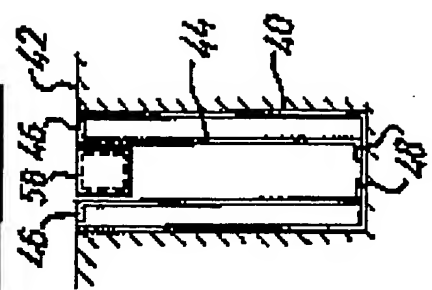


FIG. 5

